

ABSTRACT OF THE DISCLOSURE

Embodiments of the present invention provide a process sequence and related hardware for filling a patterned feature on a substrate with a metal, such as copper. The sequence comprises first forming a reliable barrier layer in the patterned feature to prevent diffusion of the metal into the dielectric layer through which the patterned feature is formed. One sequence comprises forming a generally conformal barrier layer over a patterned dielectric, etching the barrier layer at the bottom of the patterned feature, depositing a second barrier layer, and then filling the patterned feature with a metal, such as copper.

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